

# SERIAL PRESENCE DETECT

## M378B5673GB0-CF8/CH9/CK0/CMA

Organization : 256M x 64  
 Composition : 128M x 8 \* 16ea  
 Used component part # : K4B1G0846G-BCF8/BCH9/BCK0/BCMA  
 # of rows in module : 2 Row  
 # of banks in component : 8 Banks  
 Feature : 30mm height & double sided component  
 Refresh : 8K/64ms  
 Bin Sort : F8(DDR3 1066@CL=7), H9(DDR3 1333@CL=9), K0(DDR3 1600@CL=11), MA(DDR3 1866@CL=13)

Byte #	Function Described	Function Supported				Hex Value				Note
		CF8	CH9	CK0	CMA	CF8	CH9	CK0	CMA	
0	Number of Serial PD Bytes Written / SPD Device Size / CRC Coverage	CRC coverage 0~116Byte, SPD Byte Total :256Byte, SPD Byte Use : 176Byte				92h				
1	SPD Revision	Version 1.1				11h				
2	Key Byte / DRAM Device Type	DDR3 SDRAM				0Bh				
3	Key Byte / Module Type	Unbuffered DIMM				02h				
4	SDRAM Density and Banks	1Gb 8banks				02h				
5	SDRAM Addressing	Row : 14, Column : 10				11h				
6	Module Nominal Voltage, VDD	1.5V only				00h				
7	Module Organization	2Rank / x8				09h				
8	Module Memory Bus Width	Non ECC, 64bit				03h				
9	Fine Timebase Dividend and Divisor	1ps				11h				
10	Medium Timebase Dividend	1/8 (0.125ns)				01h				
11	Medium Timebase Divisor	1/8 (0.125ns)				08h				
12	SDRAM Minimum Cycle Time (tCKmin)	1.875ns	1.5ns	1.25ns	1.071ns	0Fh	0Ch	0Ah	09h	
13	Reserved	Reserved				00h				
14	CAS Latencies Supported, Least Significant Byte	6, 7, 8	6, 7, 8, 9	6, 7, 8, 9, 10, 11	6, 7, 8, 9, 10, 11, 13	1Ch	3Ch	FCh	FCh	
15	CAS Latencies Supported, Most Significant Byte	6, 7, 8	6, 7, 8, 9	6, 7, 8, 9, 10, 11	6, 7, 8, 9, 10, 11, 13	00h	00h	00h	02h	
16	Minimum CAS Latency Time(tAamin)	13.125ns				69h				
17	Minimum Write Recovery Time (tWRmin)	15ns				78h				
18	Minimum RAS# to CAS# Delay Time (tRCDmin)	13.125ns				69h				
19	Minimum Row Active to Row Active Delay Time (tRRDmin)	7.5ns	6ns	6ns	5ns	3Ch	30h	30h	28h	
20	Minimum Row Precharge Delay Time (tRPmin)	13.125ns				69h				
21	Upper Nibbles for tRAS and tRC	-				11h				
22	Minimum Active to Precharge Time (tRASmin), Least Significant Byte	37.5ns	36ns	35ns	34ns	2Ch	20h	18h	10h	
23	Minimum Active to Active/Refresh Time (tRCmin), Least Significant Byte	50.625ns	49.125ns	48.125ns	47.125ns	95h	89h	81h	79h	
24	Minimum Refresh Recovery Time (tRFCmin), Least Significant Byte	110ns				70h				
25	Minimum Refresh Recovery Time (tRFCmin), Most Significant Byte	110ns				03h				
26	Minimum Internal Write to Read Command Delay Time (tWTRmin)	7.5ns				3Ch				
27	Minimum Internal Read to Precharge Command Delay Time (tRTPmin)	7.5ns				3Ch				
28	Upper Nibble for tFAW	37.5ns	30ns	30ns	27ns	01h	00h	00h	00h	
29	Minimum Four Activate Window Delay Time (tFAWmin), Least Significant Byte	37.5ns	30ns	30ns	27ns	2Ch	F0h	F0h	D8h	
30	SDRAM Optional Features	DLL off Mode, RZQ/6, RZQ/7				83h				
31	SDRAM Thermal and Refresh Options	No ODTS, No ASR				01h				
32	Module Thermal Sensor	without TS				00h				
33	SDRAM Device Type	Standard Monolithic DRAM Device				00h				
34	Fine Offset for SDRAM Minimum Cycle Time(tCKmin)	1.875ns	1.5ns	1.25ns	1.071ns	00h	00h	00h	CAh	
35	Fine Offset for Minimum CAS Latency Time(tAamin)	13.125ns				00h				
36	Fine Offset for Minimum RAS# to CAS# Delay Time(tRCDmin)	13.125ns				00h				

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		CF8	CH9	CK0	CMA	CF8	CH9	CK0	CMA	
37	Fine Offset for Minimum Row Precharge Delay Time( $t_{RPmin}$ )	13.125ns				00h				
38	Fine Offset for Minimum Active to Active/Refresh Delay Time( $t_{RCmin}$ )	50.625ns	49.125ns	48.125ns	47.125ns	00h				
39-59	Reserved, General Section	Reserved				00h				
60	Module Nominal Height	30mm				0Fh				
61	Module Maximum Thickness	Planar Double sides				11h				
62	Reference Raw Card Used	R/C B, 1.0				21h				
63	Address Mapping from Edge Connector to DRAM	Mirrored				01h				
64-116	Reserved	-				00h				
117	Module Manufacturer ID Code, Least Significant Byte	Samsung				80h				
118	Module Manufacturer ID Code, Most Significant Byte	Samsung				CEh				
119	Module ID: Module Manufacturing Location	Onyang Korea				01h				
120	Module ID: Module Manufacturing Date	-				00h				
121	Module ID: Module Manufacturing Date	-				00h				
122-125	Module ID : Module Serial Number	-				00h				
126	Cyclical Redundancy Code	-	-			55h	17h	23h	70h	
127	Cyclical Redundancy Code	-	-			60h	C9h	16h	1Eh	
128	Module Part Number	M				4Dh				
129	Module Part Number	3				33h				
130	Module Part Number	7				37h				
131	Module Part Number	8				38h				
132	Module Part Number	B				42h				
133	Module Part Number	5				35h				
134	Module Part Number	6				36h				
135	Module Part Number	7				37h				
136	Module Part Number	3				33h				
137	Module Part Number	G-die				47h				
138	Module Part Number	B				42h				
139	Module Part Number	0				30h				
140	Module Part Number	-				2Dh				
141	Module Part Number	C				43h				
142	Module Part Number	F	H	K	M	46h	48h	4Bh	4Dh	
143	Module Part Number	8	9	0	A	38h	39h	30h	41h	
144	Module Part Number	Blank				20h				
145	Module Part Number	Blank				20h				
146-147	Module Revision Code	-				00h				
148	SDRAM Manufacturer's JEDEC ID Code	Samsung				80h				
149	SDRAM Manufacturer's JEDEC ID Code	Samsung				CEh				
150-175	Manufacturer's Specific Data	-				00h				
176-255	Open for customer use	-				00h				